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**Short communication: An Investigation into U.K. medical students’  
knowledge of lifestyle factors on cancer**

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### Abstract

Background and Aim: Lifestyle factor modification (alcohol, smoking, obesity, diet, physical activity) has the potential to reduce cancer incidence and cancer survival. This study assessed the knowledge of lifestyle factors and cancer in undergraduate medical students.

Methods and Results: 218 students (7 U.K. universities) completed an online survey of 9 questions in 3 areas: knowledge (lifestyle factors and cancer); information sources; clinical practice (witnessed clinical counselling). Diet, alcohol, smoking and physical activity were recognised as lifestyle factors by 98% of responders, whilst only 69% reported weight. The links of lung cancer/ smoking and alcohol/ liver cancer were recognised by >90%, while only 10% reported weight or physical activity being linked to any cancer. University teaching on lifestyle factors and cancer was reported by 78%: 34% rating it good/ very good. GPs were witnessed giving lifestyle advice by 85% of responders.

Conclusions: Most respondents were aware of a relationship between lifestyle factors and cancer, mainly as a result of undergraduate teaching. Further work may widen the breadth of knowledge, and potentially improve primary and secondary cancer prevention.



### Introduction

Leading organisations, including The World Health Organisation and Cancer Research U.K. have estimated that modification of lifestyle factors (excess weight, poor diet, smoking, alcohol and physical inactivity) may prevent up to a third of cancers [1,2,3] and in those patients already diagnosed, improve cancer-related survival [4]. Despite this, it has been shown that cancer specialists lack knowledge, confidence and skills in guiding patients on lifestyle modifications [5].

Current U.K. medical students are the next generation of multi-disciplinary oncological professionals, and will one day be expected to guide and deliver oncological care [6,7]. This work aimed to investigate their knowledge on the links between lifestyle factors and cancer.

### Methods

An anonymous on-line survey was created on Google Forms [8] (Appendix 1; registered with the Clinical Effectiveness Department, Greater Glasgow and Clyde). The survey consisted of 9 questions exploring 3 themes: knowledge of lifestyle factors and cancer; sources of information and clinical practice (witnessed clinical counselling). The survey design included questions appropriate for any year of medical training with distribution of the 3 themes throughout the 9 questions that

were structurally varied (open/ closed/ free comment). In addition, students provided their age, year of study (first to sixth/intercalation), and university.

Three volunteer doctors trialed the on-line survey to confirm usability. The survey link was sent to students at seven medical schools (Birmingham, Glasgow, Cardiff, Manchester, Exeter, Plymouth and Queens Belfast). These were a convenience sample as the authors had connections to each of the schools' yearbook Facebook pages [9]. This was done in February 2015, re-posted one week later, and then closed allowing a total of 14 days for completion.

### Results

A total of 218 students replied (response rate 3.5%) during the 14-day timeframe. Mean age was 21 years (range 18-32). All years and universities were represented, with highest numbers from second (36%) and fourth (32%) years (1<sup>st</sup> - 18.3%; 3<sup>rd</sup> - 6%; 5<sup>th</sup> - 5%; 6<sup>th</sup>/ intercalated year - 2.8%).

### **Theme 1: Knowledge of lifestyle factors**

Students were asked 'In general, which of the following are considered lifestyle factors?' (smoking, alcohol, diet, weight and physical activity). With all 5 boxes

available to be ticked, >98% recognized diet, alcohol, smoking and physical activity as factors. In contrast, only 69% chose weight as a lifestyle factor.

When asked 'Which type of cancer(s) is/are affected by lifestyle factors?' students selected from a list of 9 cancers, all with an established association (ranging from widely known e.g. lung, liver to less well known e.g. thyroid, bone). A high percentage recognised the association with lung cancers (96%), liver (95%) and colorectal (85%). Only 66% reported any link with breast cancer and 6% reported no associations (Fig. 1).

Students were asked to 'briefly describe which lifestyle factors have an impact upon on each of the cancers you have learnt about'. The majority linked smoking to lung cancer, and alcohol to liver cancer. Most also correctly linked smoking and alcohol to several other cancers. In contrast, 10% reported physical activity or weight as being linked to any cancer. Comments in this section ranged from '*I thought any poor lifestyle choices increased your chances of all cancers*', to '*keeping healthy in each of these lifestyle factors would decrease cancer risk..., but this is probably a not-very-significant reduction*' or '*links with lifestyle factors and cancer aren't as strong as they are for smoking-lung or alcohol-liver*'.

When asked specifically ‘how important are lifestyle factors in causing cancer?’, 98.6% stated they were important or very important. In ‘how important are lifestyle factors in treating cancer?’, 86% thought these important. When asked ‘will giving lifestyle advice to cancer patients affect their treatment? (e.g.post-surgical and short to long term survival)’, 83% agreed, with 3% reporting “no” and 14% saying they didn’t know.

### **Theme 2: Source of Knowledge**

Eighty-four percent of students reported having university teaching on cancer, with 78% including teaching on lifestyle factors (Fig. 2). The majority (53%) reported the teaching as average, 34% good or very good and 14% poor or very poor. Other sources of knowledge included: self-directed learning (62%); GP (28%) and hospital (33%) placements, and earlier school teaching (28%).

### **Theme3: Clinical Practice**

The last question asked ‘which health professionals, if any, have you seen addressing lifestyle factors with a cancer patient?’. 85% of students cited GPs and 55% hospital consultants (Fig. 3).





## Discussion

To the authors' knowledge, this is the first study to explore U.K. medical students' understanding of the relationship linking lifestyle factors with cancer incidence and survivorship. While basic awareness was high, the range of knowledge was narrow, focusing on well-recognized relationships. Anderson *et al*'s [5] study suggested a need for improved education on cancer and lifestyle factors at a consultant level and this survey confirms these findings in medical students.

Smoking is a cancer risk factor recognised by the medical profession and the general public. In a survey of the U.K. general public in 2009 (1747 responders), 85% reported smoking to be a cancer risk. However, only 32% reported unhealthy diet, 14% alcohol excess, and 7% physical inactivity, as also being risk factors. [10]. The students in our survey recognised alcohol as a risk for liver cancer and had greater numbers reporting the other risk factors than the general public. However, there remained a limited breadth of knowledge, irrespective of which year of medical school the respondent was in.

An increasing number of cancers are known to be associated with obesity, which was recognised by 69% of students [11]. Obesity is now the most important

modifiable risk factor for cancer prevention in non-smokers [3]. This is relevant to the U.K. where the majority are non-smokers and approximately 25% are classified as obese [12]. A related, but separate, risk factor is physical inactivity [13]. Overall, it appeared that students considered physical activity good for general health, but did not link it to specific cancers. Even in the physically active, increased time spent sitting (i.e. being sedentary) offsets some of the health benefits [14, 15]. This is a relatively new concept, but we think it worth noting that not one of the students reported any link.

**Commented [JL1]:** Again, I have got in your road. The sentence didn't work, so had excuse to re-introduce your concept. Hope that's OK? - happy with this and clarified sedentary. Reference in.

University teaching in cancer appears to have improved with the figures receiving cancer-related teaching (84%), and lifestyle factors/ cancer teaching (78%) much improved from the 1989 study of European students where 60% did not receive any form of oncological teaching [6]. Quality, however, may be an area to target, with two-thirds of students reporting the University teaching as 'average' or worse. An Australian group assessed cancer teaching in medical students in 1990 (n=389) and again in 2001 (n=443) [16]. They too found low ratings for teaching quality, with increasing numbers of 'poor' or 'very poor' reports in the 2001 group, despite that group spending more time in oncology departments than their predecessors (79% versus 58%).

From initial referral to first treatment, each patient interacts with GPs, surgeons, oncologists and nurse specialists allowing 'teachable moments' for lifestyle counselling. Each cancer specialist may not be aware or appreciate the importance of this role as it rarely enters specialist cancer journals [5,17]. This may partly explain why GPs, who are more likely to read general health journals, were witnessed more frequently giving lifestyle advice.

#### Limitations of this study

First, selection bias could be present, as only students interested in this topic may have responded (low response rate at 3.5%). One might argue that this self-selected sample may be more aware of links than other students. Second, only seven universities (33 total in the U.K.) participated, and the authors acknowledge that teaching and knowledge may differ in other medical schools.

#### Conclusion

The majority of U.K. medical students reported understanding of lifestyle factors and their relationship to cancer, perhaps as a result of improved undergraduate teaching. However, the knowledge of many was limited to widely known

relationships. Universities should develop strategies to improve breadth of knowledge that may influence future cancer prevention and survivorship.

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## **Appendix 1: Lifestyle Factors in Cancer Patients – Google Forms.**

### **Personal information**

Year of medical school

Age

University you attend.

**Q1: In general which of the following are considered lifestyle factors? (tick all that are correct)**

Diet

Exercise

Alcohol

Smoking

Weight

**Q2: Have you had any teaching on cancer?**

Yes

No

**Q3. From this list, which type of cancer(s) is/are affected by lifestyle factors?**

Colorectal

Breast

Lung

Pancreatic

Bone

Liver

Ovarian

Testicular

Thyroid

Don't know

**Q4. Where did you learn about the lifestyle factors affecting the cancers you selected on Q3?**

University Teaching

GP placement

Hospital Placement

Self-directed learning

School teaching

Other

No Knowledge

**Q5: Briefly describe which lifestyle factors have an impact upon each of the cancers you have learnt about. (free text)**

**Q6. Will giving lifestyle advice to cancer patients affect their treatment (e.g. post-surgical recovery and short to long-term survival)?**

Yes

No

Don't know

**Q7a. How important are lifestyle factors in causing Cancer?**

Not at all important

Not very important

Important

Very important

**Q7b. How important are lifestyle factors in treating Cancer?**

Not at all important

Not very important

Important

Very important

**Q8. Which health professions, if any, have you seen address lifestyle factors with a cancer patient?**

Consultant

Trainee/registrar

Cancer Nurse Specialist

Ward doctor/FY

Ward nurse

GP

**Q9. How would you rate your teaching on the impact of lifestyle factors on cancer?**

Very poor

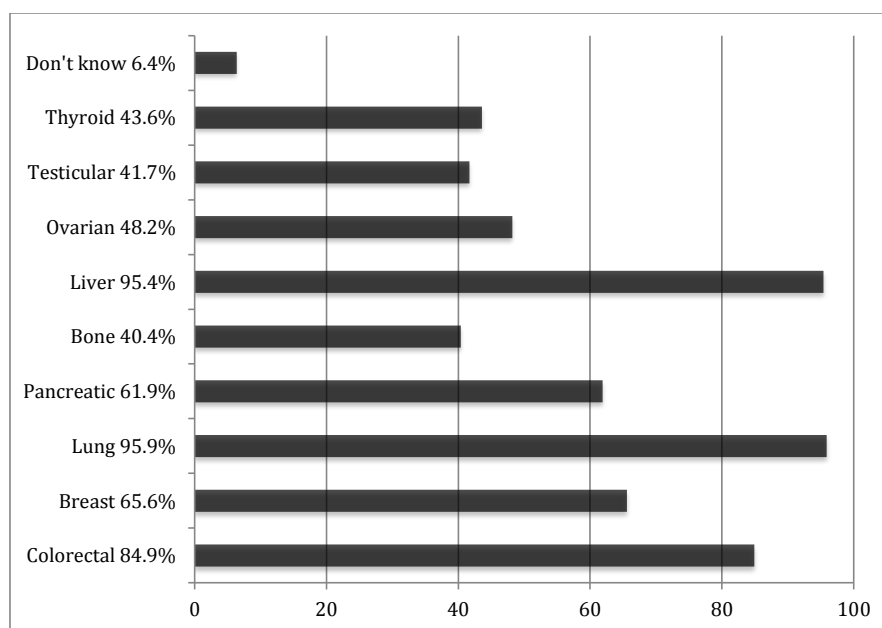
Poor

Average

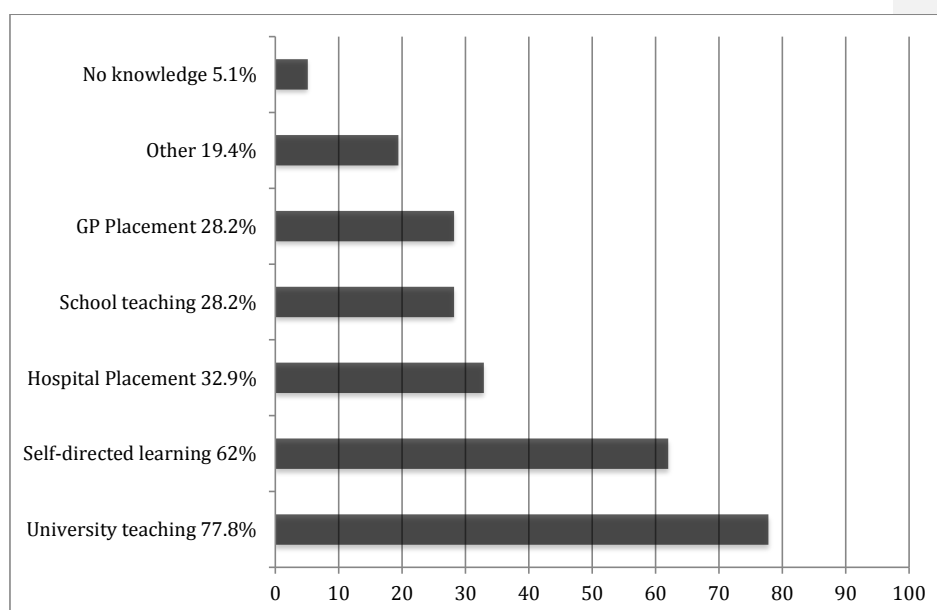
Good

Very Good.

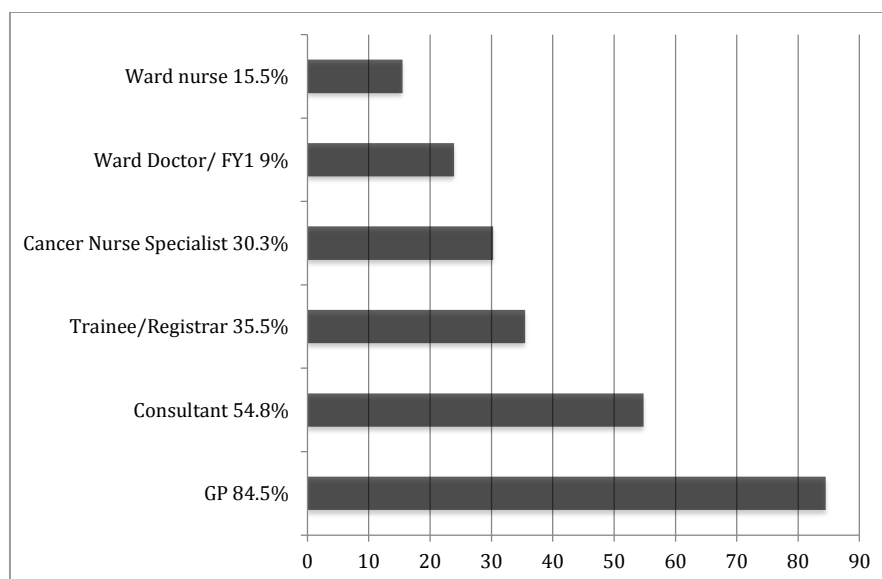
**Figure 1:** Replies to Q3 'From this list, which type of cancer(s) is/are affected by lifestyle factors?'



**Figure 2:** Replies to Q4 ‘Please select from this list where you learnt about lifestyle factors affecting the cancers you selected from Q3?’



**Figure 3:** In reply to Q8 'From this list, which health professionals, if any, have you seen addressing lifestyle factors with a cancer patient?'



FY1 – first year post-qualification from medical school

Trainee/ registrar - >3 years post-qualification from medical school